

gans Ramme, 1941 (*cf.* Ramme, *l.c.*: 36, Abb. 13), although the cerci are distinctly more strongly curved.

A third species, *C. togulata* Rehn (1951), described from the Southern Shan States, Burma, has much broader cerci than those of *malabarensis*.

The genus was previously known only from Burma, and it is interesting to find that its range extends to the west coast of India. *C. elegans* is known from Upper Burma; *C. unicolor* was

previously known only from Lower Burma but is now known to me from Upper Burma also.

REFERENCES

- RAMME, W. *Beiträge zur Kenntnis der Acrididen-Fauna des indomalayischen und benachbarter Gebiete (Orth.) mit besonderer Berücksichtigung der Tiergeographie von Celebes.* Mitt. zool. Mus. Berl. **25**: 1-243, 21 pls. 1941.
- REHN, J. A. G. *A new species of the genus Chlori-zina (Acrididae; Pyrgomorphinae) from Burma.* Notulae Nat., no. 238: 1-7, 6 figs. 1951.

ENTOMOLOGY.—*On a collection of Phlebotomus from the Yemen.* OSKAR THEODOR, Department of Parasitology, Hebrew University, Jerusalem. (Communicated by C. W. Sabrosky.)

The collection dealt with in the present note was made by Lt. Comdr. K. L. Knight, of the U. S. Naval Research Medical Unit No. 3, Cairo, Egypt, in January 1951 in southern Yemen. Practically nothing is known of the sandfly fauna of Arabia and these records may be considered as new. The collections made by Commander Knight are as follows:

Coll. 304. Ta'izz, Yemen. Jan. 12, 1951. Elev. 4,100 feet. Trapped on oiled paper at base of stone walls at damp spots by cess-pit drainages, in the city proper. *P. sergenti*, *P. langeroni* var. *orientalis*, *P. chinensis arabicus*, n. subsp., *S. tiberiadis*.

Coll. 306. Ta'izz, Yemen, Jan. 14, 1951. Elev. 3,590 feet. Trapped on oiled paper at entrances of rodent burrows (mostly *Arvicanthus* sp.) on an aloe-euphorbia hillside. Outside the town about 3 miles. *P. papatasi* var. *bergeroti*, *P. roubaudi*, *P. langeroni* var. *orientalis*, *S. africana*, *S. schwetzi*, *S. antennata* var. *cineta*.

Coll. 307. Ta'izz, Jan. 15, 1951. Same as coll. 304. Same species.

Coll. 309. El-Hauban, Wadi el-Maleh, about 3 miles east of Ta'izz. Jan. 17, 1951. Elev. about 3,700 feet. Trapped on oiled paper in rodent burrows at base of small rock cliff. *P. roubaudi*, *S. tiberiadis*.

Coll. 15. Ta'iz, Yemen. Jan. 21, 1951. Caught biting a number of small boys sitting near our quarters in town. From dark until 19:45 hours. Bright moon. *P. papatasi* var. *bergeroti*, *P. sergenti*, *P. langeroni* var. *orientalis*, *P. chinensis arabicus* n. subsp.

Genus *Phlebotomus* Rondani, 1840

Subgenus *Phlebotomus* Rondani

Phlebotomus papatasi var. *bergeroti* Parrot, 1934

3 ♂♂, 1 ♀ coll. 306; 1 ♀ coll. 15, biting man in Ta'izz. The species has been recorded from Djanet in southern Algeria, from Abyssinia, and the Anglo-Egyptian Sudan.

Phlebotomus roubaudi Newstead, 1913

1 ♀, 5 ♂♂ coll. 306; and 1 ♀ coll. 309 from rodent burrows.

This species was originally described from Akjoucht in Mauretania and has subsequently been found to occur in a belt south of the Sahara throughout Africa. It has been found by Kirk and Lewis west of Lake Rudolf in the Anglo-Egyptian Sudan.

The absence of typical *P. papatasi*, which is closely related to these two species and which occurs commonly in the Anglo-Egyptian Sudan (together with *P. papatasi* var. *bergeroti* but not with *P. roubaudi*) is noteworthy.

Subgenus *Paraphlebotomus* Theodor, 1948

Phlebotomus sergenti Parrot, 1917

2 ♂♂, 2 ♀♀ coll. 304/307; 1 ♀ coll. 15, biting man in Ta'izz. This species is known from the central Sahara, French West Africa, the southern Mediterranean, and from the Middle East, extending into North West India. It is very common in Bagdad, where it is the main carrier of Oriental sore and rare in Palestine. It has not been recorded from the Anglo-Egyptian Sudan or from Abyssinia, where 2 other species of the subgenus occur (*P. alexandri* and *P.*

sergenti var. *saevus*). It may therefore be assumed that *P. sergenti* reached Arabia from the north.

Subgenus *Laroussius* Nitzulescu, 1931

Phlebotomus langeroni var. *orientalis* Parrot, 1936

38 ♀♀ coll. 15, biting man in Ta'izz; 5 ♂♂ coll. 304/307; 12 ♂♂ coll. 306 from rodent burrows.

This is the most numerous species in the collection. It was raised to specific rank by Parrot in 1946, but the differences from *P. langeroni* are so small that it is probably better regarded a variety or subspecies of *P. langeroni*. *P. langeroni* var. *orientalis* is known from Abyssinia and from the Anglo-Egyptian Sudan, mainly in the area west of Lake Tana. It is the only common representative in the area of the subgenus *Laroussius* (major group), which contains the principal carriers of Kala Azar in the Mediterranean, and it is considered the carrier of Kala Azar in the Sudan. *P. longipes*, which also belongs to this subgenus, has, according to Kirk and Lewis, been found only in one locality in the Sudan, from which Kala Azar is not known.

A few cases of Kala Azar have been recorded from Arabia. Two cases were recorded by Phillips (1904) in adults of 30 and 35 years of age from the Yemen and the Hedjaz. Whittingham (1937) mentions the case of a British officer who contracted the disease in Aden. Two further cases were recently recorded by Fawdry and Mazhar (1951) in children of 4 and 6 years, one from Ta'izz and the other from Beidha, 150 miles north of Aden. Two cases were recently diagnosed in Jerusalem in immigrants (young adult males) from the Yemen (unpublished). According to the age distribution of the few cases known from Arabia, the disease seems to be of the Sudanese type of Kala Azar, which according to Kirk "is chiefly a disease of late childhood and early adult life" and not as Mediterranean Kala Azar mainly a disease of young infants. Whittingham mentions that the sandflies from Aden were repeatedly identified as *P. perniciosus*. This species, which occurs only in the western Mediterranean, was not then distinguished from *P. langeroni* and its related forms. Presumably the sandflies from Aden were also *P. langeroni* var. *orientalis*. This species is thus apparently common in southern Arabia and bites man as the present records show. *P. langeroni* var. *orientalis* may therefore be considered also as the carrier of Kala Azar in southern Arabia.

Subgenus *Adlerius* Nitzulescu, 1931

Phlebotomus chinensis arabicus, n. subsp

1 ♂, 1 ♀ coll. 304/307; 1 ♀. coll. 15, Ta'izz, biting man.

The occurrence of a form of *P. chinensis* in southern Arabia is very interesting. The species consists of 6 or 7 local forms, which are widely distributed throughout Asia, including northern India and China, the Middle East, and the eastern Mediterranean. None has been recorded so far from the Ethiopian region or North Africa. The various forms differ in the male mainly in the shape of the penis and the length of the genital filaments and in the armature of the pharynx in the female and in various measurements. The status of these forms has not yet been finally determined and a study of the whole group is required. They will probably have to be made into subspecies or even species.

Female.—Size 2.5 to 3 mm. Wing, length 2.5 to 2.9 mm; width 0.6 to 0.8 mm. Wing index $\alpha/\beta = 1.8$ to 2.3 mm. Palp formula: 1, 4, (2, 3), 5. Relative length of segments: 1-4-4-3.4-8. Antennae: Segment 3 > 4 + 5. A3/E = 1. Armature of pharynx rather similar to that of *P. chinensis* var. *simici*, extending forward about a quarter of the length of the pharynx. Spermatheca as in the other forms of *P. chinensis*.

Male.—Size 2.5 mm. Wing, length 2.5 mm; width 0.65 mm. Wing index $\alpha/\beta = 1.7$. Palp formula 1, 4, 2, 3, 5. Relative length of segments: 1-3.3-3.8-3-9. Antennae: Segment 3 > 4 + 5. A3/E = 1.5.

Genital filaments eight times as long as pump. Penis with a very shallow subterminal tubercle, which is rather far removed from the tip.

The subspecies from the Yemen resembles most closely the form from Cyprus but differs in the antennal index A3/E, which is 0.7 in the ♀ and 1.1 in the ♂ in the Cyprus form. The genital filaments are longer (6.6 times as long as the pump in the Cyprus form) and the subterminal tubercle is shallower and further removed from the tip than in the Cyprus form.

Type at present in the author's collection.

Genus *Sergentomyia* Franca, 1920

Subgenus *Sergentomyia* Franca

Group fallax

Sergentomyia antennata var. *cincta* Parrot and Martin, 1944

3 ♀♀, 4 ♂♂ coll. 306, from rodent burrows. The species occurs in the Anglo-Egyptian Su-

dan, French Somaliland, and Uganda. It has 14 to 20 teeth in the buccal cavity and a rather narrow pharynx with relatively coarse teeth in the female. The specimens from the Yemen agree well with the description of the species. There are about 20 teeth in the buccal cavity of the female.

Sergentomyia schwetzi Adler, Theodor, and Parrot, 1929

2 ♀ ♀, 1 ♂ coll. 306, from rodent burrows.

Group *africana*

Sergentomyia africana Newstead, 1912

3 ♀ ♀ coll. 306, from rodent burrows.

Kirk and Lewis (1951) propose to change the name of the species to *S. freetownensis*. This change, however, requires a ruling of the International Commission for Zoological Nomenclature, suppressing the name *S. africana*. The old name is therefore retained until the nomenclatorial position is clarified.

Subgenus *Sintonius* Nitzulescu, 1931

Sergentomyia tiberiadis Adler and Theodor, 1930

Syn. *S. subtilis* Parrot and Martin, 1944

6 ♂ ♂, 1 ♀ Ta'izz, coll. 304/307; 1 ♂ coll. 309, El-Hauban.

The species was recorded from Abyssinia by Parrot in 1936 as *P. tiberiadis*. Later Parrot described the male of the species as *P. subtilis*, and in 1940 Parrot redescribed both sexes under

the name *P. subtilis*. Comparison of the type specimens of *P. tiberiadis* from Palestine with specimens of Parrot's original series, with specimens from the Sudan, and with the specimens from the Yemen showed that there are practically no constant differences between the material from the different localities. The characters on the basis of which Parrot separated *S. subtilis* from *S. tiberiadis* are so small and variable that they do not justify the retention of *S. subtilis* as a separate species.

The *Phlebotomus* fauna of the Yemen is thus, as was to be expected, mainly Ethiopian in character. Seven out of the 9 species recorded occur in Abyssinia and the Anglo-Egyptian Sudan. Only one Mediterranean species, *P. sergenti*, and a new subspecies of *P. chinensis* were found, the various forms of which are widely distributed in Asia and the eastern Mediterranean.

REFERENCES

- FAWDRY, A. L., and MAZHAR, M. *Two cases of Kala Azar in South Arabia*. Trans. Roy. Soc. Trop. Med. and Hyg. **45**: 138, 1951.
- KIRK, R., and LEWIS, D. J. *The Phlebotominae of the Ethiopian Region*. Trans. Roy. Ent. Soc. London **102**: 383, 1951.
- LEWIS, D. J., and KIRK, R. *The sandflies of the Anglo Egyptian Sudan*. Bull. Ent. Res. **41**: 459, 1951.
- PHILLIPS, L. *On the occurrence of the L.D. parasite in Arabia and Egypt*. B.M.J. **195**: 657, 1904.
- WHITTINGHAM, H. E. Trans. Roy. Soc. Trop. Med. and Hyg. **30**: 403, 1937.

BIOLOGY.—*New records of Diaptomus sanguineus and allied species from Louisiana, with the description of a new species (Crustacea: Copepoda)*. MILDRED STRATTON WILSON, Arctic Health Research Center, U. S. Public Health Service, Anchorage, Alaska, and WALTER G. MOORE, Loyola University, New Orleans, La.

Marsh's record of the occurrence in Louisiana of the fresh-water copepod *Diaptomus sanguineus* Forbes appears to be based upon personal correspondence with Edward Foster (see Marsh, 1929, pp. 13, 15, and 17), whose manuscript records were published by Penn (1947). This lists the species as occurring near Slidell, in St. Tammany Parish, rather than near New Orleans as given by Marsh. Collections made in 1951 and 1952 by one of us (Moore) indicate that the species is very common in St. Tammany Parish, where it occurs in seasonal ponds and

ditches, frequently in association with *Diaptomus stagnalis* and *D. conipedatus*. Collections made near Alton and Florenville from January to February 29 contained adults; most females collected on the latter date were ovigerous. The species also has been found in temporary pools and ponds north of Alexandria, Rapides Parish, in the central part of the State. Here most of the specimens found on December 28 were immature; only adults were present in collections made on April 6.

Two species allied to *sanguineus* have